

surroundings encourage the formation of sound teeth in a sound body; but I cannot but think that the principal cause of caries must be looked for in the food. It is plainly shown by many investigators, and in the paper above referred to, that caries is rare among peoples who subsist principally upon animal food; the Esquimaux showed, among sixty-nine skulls, only two cases of caries, and the largest amount of disease was found among those races who lived upon a mixed or exclusively vegetable diet. These results are, of course, easily understood under the more accurate knowledge which we now possess of the immediate causes of dental caries.

As to the relative frequency with which different teeth are affected, I think statistics plainly show that it is the first molar tooth of the lower jaw which is most prone to decay of any tooth in the series, and most authorities consider the second lower molar as the next in order; with these two exceptions the upper are more frequently diseased than the lower teeth. This would, however, not affect the argument, as the lower molars are of course also supplied by the fifth nerve.

Structural defects, due to inherited weakness or imperfect nutrition during the development of the teeth, combined with the use of soft cooked food, which is long retained in contact with them, and is of a nature eminently suitable for fermentation, give us, I think, the principal factors of decay among civilised races.

While allowing the influence of nerve strain in early childhood, and as a factor in hereditary transmission of defective structure, I fail to see how it can influence teeth already formed.

J. HOWARD MUMFERY.

May 27.

Centipedes and their Young.

REFERRING to Mr. Ulrich's letter in your issue of April 5, I send the following remarks, which no doubt will interest some of your readers. During my eight years' residence in Guiana, I have frequently had brought to the museum, centipedes of from 5-8 inches in length, carrying their young clasped by means of their legs to all parts of the under-side of the body, though generally the young have been clustered in dense masses rather than scattered. In their very early stages the young are closely clustered, and seem quite unable to clasp their parent in turn, but later they become very restless, and will be seen moving about independently, and when clustered by the action of the parent they are incessantly changing their position in the cluster. When the young are thus bunched together, the body of the parent is coiled upon itself at that part; and the contrast between a centipede in this position, and a scorpion carrying her young upon her back, just as a small opossum does, is a very marked one.

I had imagined that this habit of the centipedes was widely and generally known; and indeed Packard ("Guide to the Study of Insects," p. 674) remarks that "Wood also states that the female guards her young by lying on her side, and then coiling her body passes them along by a rapid cilia-like action of her feet, thus arranging them satisfactorily to herself." This is but a very terse description of what will be observed when one disturbs a centipede and the arrangement of her young about her body.

As remarked by Dalton ("History of British Guiana," vol. ii. p. 267), the centipedes "lay their eggs in clusters like little berries on the ground, and the female chooses an obscure place for this purpose, as under flower-pots, where she can remain until the eggs are hatched." Centipedes are not seldom met with in such obscure and uniformly moist places as under flower-pots and tubs, or boards and shingles, with their eggs clustered as described.

With regard to the disappearance of the young ones from the box forwarded from Trinidad to London, the most likely explanation is that they were eaten by the parent. If the parent centipede be kept with the young ones, and left unfed for a day or two, it will be observed to feed quite leisurely and greedily at times on its young. This I have witnessed directly in three separate cases where they had been kept unfed in a long glass jar in the museum. The most desirable food for centipedes in the tropics, I may incidentally remark, is the cockroach.

J. J. QUELCH.

The Museum, British Guiana, May 10.

NO. 1284, VOL. 50]

The Penetrative Power of Bullets.

I HAVE been stimulated by the recent trials of the bullet-proof cuirass, to try a few experiments on the subject. I will only mention one experiment, which I made this morning, assisted by several members of the junior scientific club here. It occurred to me that if the energy of the bullet could be made to act at rather a large angle to its line of flight, its penetrative power would be diminished. To effect this, I arranged a number of soft iron rods $\frac{1}{8}$ -inch in diameter and 5 inches long, side by side and touching a piece of deal board; on these another layer was placed, so that one of the upper rods touched two of the under ones. A sheet of thin rubber $\frac{1}{8}$ -inch thick, placed on this, separated it from a similar combination attached to it at right angles; and the whole formed the target. The rifle used was a Winchester, 22 bore, carrying a long bullet. At a distance of 20 feet the bullet penetrated 5 inches of hard pine with certainty; but when the bullet fired at the same distance hit my rod target, it failed to penetrate even the first layer, but only drove the upper rods aside nearly at right angles to the line of flight. The next experiments will be made with heavier materials and larger shot. Possibly a similar arrangement, but of large steel cylinders, might make a satisfactory barrier to the shot of big guns.

FREDERICK J. SMITH.

Millard Engineering Laboratory, Oxford, June 1.

The Garhwal Landslip.

LET me point out that the paragraph on p. 109 of NATURE for May 21, stating that the landslip that had occurred in the Garhwal district in the Himalaya, blocking up the Bireh Ganga river, had burst, causing the loss of many lives, is erroneous. The catastrophe reported from India had reference to a locality in Kulu, and not to Garhwal, the two being several hundred miles apart.

An accurate description of the Garhwal landslip will, I hope, be shortly published in the Royal Geographical Society's journal. The obstruction is being carefully watched, and the water has not yet topped it. There is, I think, considerable reason to anticipate that no great destruction will be caused at this place, as the landslip is of such vast dimensions as to make it almost impossible that it should be carried away in a manner to give rise to a great and sudden flood. It is upwards of a mile in length and two-thirds of a mile wide, rising about 900 feet above the original level of the valley, and being largely composed of enormous masses of rock.

June 1.

R. STRACHEY.

Research Work.

MAY I be allowed to suggest that it would be a great help to many interested in science if an authorised body, such as the British Association, were occasionally to indicate paths of research work in different branches of science, especially in physics and chemistry, which would offer a reasonable prospect of leading to useful results? Many, especially among those engaged in educational work away from London, have not the advantage of continued intercourse with the leaders of scientific thought which would give them the opportunity of forming a judgment themselves, and the fear of having been forestalled by others makes them hesitate to devote the time required for a sustained course of experimental research. Within the writer's experience, men whose judgment carries great weight do not individually feel inclined to give advice which they consider ought primarily to be devoted to the advancement of their own students. The advantages of a laboratory, of leisure time, and of a desire to add their quota to the stock of knowledge are not, by the wise, thrown away, but a great deal of energy, at present more or less dissipated, might be diverted into more useful channels if the above suggestion were carried out—offering each one the opportunity of choosing that particular line of research which most nearly satisfies the conditions in which he is placed. The idea might be still further developed by associating workers together for a common end, even at the risk of not being able to eliminate the personal factor.

W. G. WOOLLCOMBE.

Birmingham, May 31.

A Daylight Meteor.

THE following account of a meteor, seen by me in full daylight, may be of interest to readers of NATURE. It was written a few hours after the meteor appeared.

While practising at cricket to-night (May 18), in splendid light, I observed at 7.58 (railway time) a very brilliant meteor cross the sky obliquely from a point considerably north of the zenith to the south-east. Its movement was very slow, and it shone with a brilliant intense white light, which was concentrated in itself, and did not leave a train behind it like the meteor of March 18, 1893, which I had also the good fortune to see.

It got gradually smaller and smaller, and just before disappearing broke up into three or four pear-shaped portions. During its course, although the massy head was always brilliantly white, the little tail varied in hue, crimson and a rich ultramarine blue being most noticeable.

I immediately timed it, and found that it was about 13 seconds in view, which I thought a very long time indeed.

From diagrams made on the same evening, it seems that the meteor moved from a point 40° from the zenith, and some 15° west of north to a point about 30° east of south at an altitude of 30°.

JAS. G. RICHMOND.

Muirkirk, Ayrshire, May 30.

P.S.—The head when first seen had an apparent diameter about $\frac{1}{2}$ that of the sun, and when last seen $\frac{2}{3}$ sun's diameter. It rolled across like a ball with a very short tail, until it broke up, when the distance from the head to the tail of the last pear-shaped portion was about $3\frac{1}{2}$ sun's diameter.

Iron Crows' Nests.

REFERRING to the note by Mr. McMillan, in your issue of May 3, it may be of interest to some of your readers to know that we have in this museum a crow's nest from Rangoon entirely made of iron wire such as is used in fastening the corks of aerated water bottles. The donor, Mr. Joseph Dawson, of the Public Works Department, Rangoon, stated in his letter at the time that "wire nests are hardly a novelty in this country, as they can always be obtained from high trees in the vicinity of aerated water factories." The nest in question has a piece of hoop-iron about three or four inches long woven into it; but with that exception it is entirely composed of the small wire, and is about a foot in diameter.

J. MACNAUGHT CAMPBELL.

Kelvingrove Museum, Glasgow, May 28.

THE REPORT OF THE COMMITTEE ON ARMY EXAMINATIONS.

IN the *Times* of Wednesday, 23rd ult., there was a brief account of the report lately presented to Parliament by the committee appointed in 1893 "to enquire into the entrance examinations (in non-military subjects) of candidates for commissions in the Army, and to advise whether any modification of the existing arrangements is desirable."

The syllabus of subjects and marks recommended by the committee is as follows:—

CLASS I.—(All may be taken up.)

	Marks.
1. Mathematics	3000
2. Geometrical Drawing... ..	1000
3. French or German	2000
4. English... ..	1000
5. Freehand Drawing	500

CLASS II.—(Any three subjects may be taken up, but for Woolwich one of the three must be Chemistry and Heat.)

	Marks.
1. Pure Mathematics	2000
2. Applied Mathematics... ..	2000
3. German or French, as alternating with the same group in Class I.	2000
4. Latin	2000
5. Greek	2000
6. English History	2000
7. Chemistry (inorganic) and Heat	2000
8. Electricity and Magnetism and Light	2000
9. Geography, Political and Physical, and Geology	2000
10. Biology... ..	2000

Certain recommendations as to the fusion of the Woolwich and Sandhurst examinations, the admission to the

NO. 1284, VOL. 50]

Army of Queen's cadets, Militia candidates, and University candidates are also made.

In regard to the question of marking for physical exercises and development, which has lately been strongly advocated, it is advised that these subjects should not be marked in these competitions. It seems to be thought, however, that though the physique of our officers has been *well maintained* under the competitive system, yet a small proportion of cadets have been admitted who were not quite up to the necessary standard, and it is recommended that the medical examination should be made somewhat more stringent.

The two changes of greatest importance which have been advised by the committee are, briefly, as follows—

(1) That an elementary knowledge of chemistry and heat shall be made practically obligatory for Woolwich.

(2) That Latin shall be transferred from Class I. to Class II.

There is also a minority report on certain points, viz., on the suggestion of a complete fusion of the competitions for Woolwich and Sandhurst, and on the proposal to transfer Latin to Class II. This is signed by three of the nine members of the committee, and one of these three also signs a separate note in which he dissents from the addition of geography to No. 9 of Class II., and of biology to Class II. as a new subject, and makes certain proposals to meet the special needs of Woolwich (which he admits) that would certainly fail to effect their proposed purpose.

On May 29, this report, and especially the two recommendations relating to science for Woolwich, and to Latin, were vehemently attacked by the *Times* in an article in which the report was denounced as such an one as "might have been framed by a committee of crammers," so far as their probable effect is concerned, rather than by a committee which is unanimous in subscribing to the principle laid down in 1869-70, that the examinations should be designed "with special reference to the curriculum adapted at the most advanced of our public schools, and with the express intention of enabling the competitors to come straight from one of those establishments to the examination-hall without having occasion to resort to any intermediate place of study." And again in a later paragraph, as a mere attempt by a portion of the committee to show themselves modern and advanced at all hazards by replacing the dead languages by the new sciences—Latin by chemistry—which latter subject is pronounced to be the most easy of all to cram in face of the statistics, produced by the Civil Service Commissioners and printed with the report, which show the subject to be above the average in discriminating power—that is to say, one in which teachers have not succeeded, by cramming or in any other way, in raising the marks of the least apt to or near the level of those of the more apt.

The *Times* has not hesitated to accuse the majority of the committee of disregarding the evidence before them, but has itself committed this fault. Its case is indeed mainly founded on such disregard of the facts. By coupling together two changes which stand upon entirely different footings it creates the impression, and is itself apparently under the impression, that the committee was divided on both the above proposals. Nothing is plainer in the reports than that this was not the case.

From the same cause, a reader would gather from the *Times* that science is recommended as an obligatory subject for all Army candidates, whereas nothing of the sort has been proposed.

Then it ignores the fact that the opinions of head masters as expressed to the committee were almost entirely in favour of giving more weight to science in the case of Woolwich candidates. And finally, it seeks to give weight to the opinions of the minority of